

## PATENT SPECIFICATION

Application Date: Dec. 18, 1933. No. 35,597 / 33.

417,552

Complete Specification Accepted: Oct. 8, 1934.

## COMPLETE SPECIFICATION.

## Process for the Production of Stable Mixtures Containing Vegetable Lecithin with or without Soya Oil.

We, METALLGESELLSCHAFT AKTIEN-  
GESellschaft, a Corporation organised  
under the Laws of Germany, of 45,  
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Main, Germany, and ALBERT DATZ, a  
German Citizen, of 18, Kranichsteiner-  
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many, do hereby declare the nature of  
this invention and in what manner the  
same is to be performed, to be particu-  
larly described and ascertained in and  
by the following statement:—

This invention relates to a process for  
the production of stable mixtures con-  
taining vegetable lecithin with or without  
soya oil.

Soya beans contain vegetable lecithin,  
considerable quantities of which are dis-  
solved out during the extraction of the  
oil, for example with benzine. On steam  
being introduced into the miscella after  
evaporation of the solvent, the lecithin  
swells up and consequently separates  
quickly from the oil and settles down.  
After the bulk of the oil has been  
removed, this sediment consists of  
lecithin oil and water. Neither the oil  
nor the water can be completely separ-  
ated from the lecithin by mechanical  
means. In order to obtain an anhydrous  
lecithin, the water must be expelled in  
vacuo, in which operation decomposition  
of the lecithin is unavoidable, notwith-  
standing the presence of oil, since as is  
known, lecithin is very sensitive to heat.  
The solubility of the resulting product is  
unfavourably affected in consequence.  
The oil can only be completely removed  
with difficulty and moreover a lecithin  
which is free from oil is more susceptible  
to decomposition than one containing the  
latter.

In itself, the oil content of lecithin is  
innocuous for most of the purposes for  
which the lecithin is used, soya bean oil  
being an edible oil of agreeable flavour  
and aroma. Whether the lecithin be  
used for edible purposes, such as an  
ingredient in the preparation of food-  
stuffs, or whether it be employed for  
pharmaceutical or dietetic purposes, it is  
practically unnecessary for the oil to be  
eliminated.

The undecomposed soya sediment pre-  
cipitated from the oil by the introduction  
of steam is of a pale yellow colour and  
agreeable taste and smell, so that it can  
be employed direct without any purifica-  
tion and treatment, in the manufacture  
of food stuffs, such as margarine. How-  
ever, it exhibits the extremely undesir-  
able property of very quickly undergoing  
fermentation, thereby becoming decom-  
posed and assuming a dark colour and  
an unpleasant taste and smell, so that it  
becomes unsuitable as a foodstuff and, if  
it is to be utilised, must first be sub-  
jected to an expensive purification and  
separation treatment.

Where the fresh soya sediment can be  
used as soon as obtained, no treatment of  
any kind is needed to prevent its  
deterioration. This state of things how-  
ever, is only of very rare occurrence  
because for the most part, the foodstuff  
factories are not attached to the oil  
works.

The present invention provides a pro-  
cess for treating the fresh soya sediment  
in such a manner that it neither under-  
goes fermentation nor suffers any  
deterioration of its properties by the  
nature of the treatment, such as occurs,  
for example, in the course of drying in  
vacuo.

It has been ascertained in accordance  
with the invention that this result is  
attained by mixing the soya sediment  
with a carrier substance in such propor-  
tions that the mixture contains  
at least 25% by weight of lecithin  
and then spray-drying the mixture in  
warm air. Under these conditions the  
carrier substance is contained in every  
particle and envelops or carries the con-  
stituents of the soya sediment. Suitable  
carriers are substances that are adapted  
for the purpose for which the finished  
product is intended. Such carriers may  
for example be casein, gelatine, vegetable  
albumin, glucose, gelatinised starch,  
blood, blood serum, flour and a variety  
of other substances, but the use of milk as  
carrier substance is excluded from the  
scope of the present invention.

Whilst an emulsion consisting of

lecithin, oil and water cannot be dried by atomisation accompanied by the application of heat, it is possible (with the mixture prepared in accordance with the hereindescribed process) to obtain in this manner, in the shortest time and without any decomposition, a durable product, in the state of powder, which will keep well, is readily soluble and can be applied to a variety of uses.

Pure lecithin free from fat, is extremely susceptible to the action of the air and quickly undergoes alteration and decomposition on storage. If pure lecithin be mixed with one of the hereindescribed carrier substances and if necessary a liquid medium such as water or the like, to form a colloidal solution or emulsion suitable for spray-drying and if the mixture be spray-dried in warm air, each particle of lecithin will be enveloped in a sheath consisting of the carrier substance and is thus protected from any harmful effects. The hereindescribed process therefore also affords considerable advantages in the treatment of oil-free lecithin.

#### EXAMPLE.

50 parts by weight of an unfermented soya sediment composed of lecithin, oil and water, and from which the bulk of the oil has been removed, are mixed with 30 parts of casein to form a mass of uniform consistency, the mixture being then spray-dried in a current of warm air.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1). A process for the production of stable mixtures containing vegetable lecithin and soya oil which comprises mixing fresh unfermented soya sediment with a carrier substance other than milk, for example casein, gelatine, vegetable albumin, glucose or the like, in such proportions that the mixture contains at least 25% by weight of lecithin, and spray-drying said mixture in warm air.

2). A modification of the process as set forth in claim 1, in which oil-free lecithin is mixed with the carrier substance in such a manner as to form an emulsion and said emulsion is spray-dried in warm air.

3). The process for the production of stable mixtures containing vegetable lecithin with or with soya oil, substantially as described.

4). Stable mixtures containing vegetable lecithin, whenever produced by the process particularly described and ascertained.

Dated this 18th day of December, 1933.

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